031

555 Signal Generator Kit

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The 555 is a timer IC that has so many applications that it is not possible to name all of them. Here, a 555 forms the heart of a simple signal generator, which can produce square wave, rounded square wave, triangular and sinusoidal signals. A wire bridge or jumper can be used to connect one of these signals to an output buffer. The circuit produces a fixed output frequency of 1 kHz, and the output level can be adjusted between 0 and approximately 200 mV_{eff} using a potentiometer.

The 555 is wired as a squarewave generator, with the output frequency determined by the values of R1, R7 and C3. The symmetry of the squarewave depends on the ratio of R1 and R7. The output signal goes via the voltage divider R8 and R2 and jumper J1 to transistor T2, which is configured as an emitter follower. A low-impedance signal is available at the emitter of T2. This is finally brought to the output via the coupling capacitor C8 and potentiometer RV1.

The squarewave is integrated by the RC time constant of R4 and C5, and the resulting rounded squarewave is available at J2, from which it can be buffered by T2. A second RC stage (R5 and C6) makes the signal transitions even more gradual, so that something resembling a triangular waveform is obtained. This signal is available at J3. Finally, the tops of the triangular waveform are rounded off by the amplifier stage around T1, due to the presence of C2. This signal is available at J4.

The current consumption of the circuit is approximately 10 mA, so it can easily be powered by a 9-V battery. Diode D1 provides reverse-polarity protection, so that the 555 and the transistors will not go up in smoke if you accidentally connect the battery the wrong way around.

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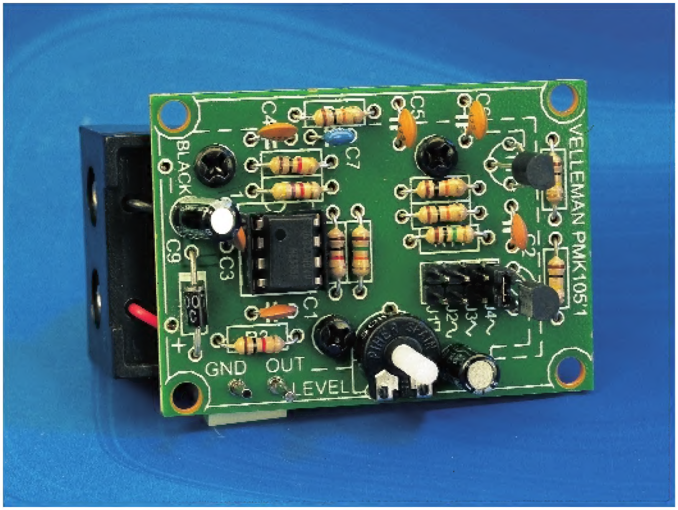

The order code of this Velleman kit is MK105.

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